



CONSENT TO PARTICIPATE IN (MINIMAL RISK) RESEARCH Simon Fraser University

Principal Investigator: Stephen R. Campbell, PhD **Phone:** 604-291-3630
Application Number: 37778 **Email:** sencael@sfu.ca
Study Title: *Mathematics Educational Neuroscience Laboratory*
First REB Review: 2006/08/09 **Latest Amendment:** 2007/01/17

Informed consent involves:

- **Disclosure** of relevant information to prospective participants about the research;
- **Comprehension** of the information provided; and,
- **Voluntary agreement** to participate, free of any coercion or undue influence.

Disclosure

You are invited to participate in research conducted by Dr. Stephen R. Campbell, Ph.D. ***Your participation in this study is entirely voluntary.*** Data you provide is assigned an anonymous Participant Code. ***You can discontinue your participation at any time.*** Furthermore, your decision *not* to participate will have *no* adverse effects on your grades, your evaluations in any class, or your status in any program.

Please read all the information below and ask questions about anything you do not understand before deciding whether to participate. When all of your questions have been answered to your satisfaction, you may then, if you so choose, sign the attached consent forms to volunteer and participate in various aspects of this research study.

PURPOSE OF STUDY

This research study investigates the nature of mathematics related anxieties and understandings using computer learning environments and stimuli. It also investigates interdependencies between mathematics related anxieties and understandings. These data sets will be maintained securely and anonymously for subsequent analyses, and may be submitted for presentation to academic venues and in academic publications.

THREE DATA SETS (COMPONENTS) THAT MAY BE GATHERED

(1) The first kind of data that may be gathered is mainly *psychometric*, starting with various questionnaires pertaining to demographics, mathematics related anxieties and understandings, with optional follow up interviews. For those volunteering for the minimal risk components of this study (see below), questionnaires pertaining to medical history and present states for screening and ensuring safety must be obtained as well.

(2) The second kind of data that may be gathered is *audiovisual* data that will record research participants' vocal and facial expressions and body movements, as well as capturing computer activities, such as recording the computer screen, key strokes, and mouse movements and clicks. Eye gaze, eye movement, pupil dilation (**ET**) data may be acquired using photodetectors and low-level infrared light emitters.



(3) The third kind of data that may be gathered is called *psychophysiological*, including *electroencephalograms (EEG)* to measure ‘brain waves’, *electromyograms (EMG)* to measure muscle movement, *electrocardiograms (EKG)* to measure heart rate, *skin conductance (SC)*, *temperature (T)*, *blood volume flow (BF)*, and *respiration (R)*. These data sets are acquired using transducers and conductors (electrodes).

PROCEDURES USED IN COLLECTING COMPONENT DATA SETS

(1) Psychometric data. These data are acquired in the standard form of questionnaires and semi-structured interviews. Some initial screening questionnaires will help determine whether any further data will be collected. Time commitment: approx. ½ - 1 hour.

(2) Audiovisual data. Cameras and microphones will be used to acquire audiovisual data during computer tasks and/or clinical interviews. Keystroke and mouse movement data will also be recorded during computer tasks. *Very low levels of infrared light (LLIL)* are reflected off of the retina for ET data. Time commitment: approx. ½ - 1 hour.

(3) Psychophysiological data (see above). EEG, EMG, EKG, SC, T, BF, and R data are acquired through electrodes placed on the scalp and other select areas of the skin using small amounts of gel to detect extremely small differences in voltage potential that are naturally generated through biophysical means. SC involves a negligible current through the skin, and BF also involves LLIL. Time commitment: ½ - 1 hour in addition to (2).

POTENTIAL RISKS AND DISCOMFORTS

Component 1 involves no risk, and your participation in Component 1 places no obligation on you to volunteer to participate in Components 2 and 3 (see above).

Components 2 and 3 are minimal risk research. All instrumentation complies with the relevant requirements of the applicable Canadian Standards Association and SFU Research Ethics Board standards and guidelines pertinent to the use of such equipment. Consent forms identifying participants will be kept separately and securely from all data acquired, and will be assigned an anonymous Participant Code. It is remotely possible that participants may be identifiable through the anonymous presentation or publication of audiovisual data (Component 2). If you do not wish for your likeness to be presented or published, you can indicate your preference(s) in this regard on Page 3 below. Your participation in Component 2 places no obligation on you to participate in Component 3.

Some discomfort from the use of conductive gel and/or tape for attaching electrodes may be incurred. Volunteers will have completed a prescreening questionnaire to mitigate risks based on their health history. For some participants, mathematics related anxieties may evoke physical reactions and/or emotional discomfort.

RIGHTS OF RESEARCH PARTICIPANTS

You will receive a copy of your signed consent form(s), and at any time you may revoke your permission to use non-aggregated data acquired from you at any time preceding submission for academic presentations and/or publications by notifying the principal investigator in writing. Page 4 is provided for your convenience in this regard.

At your option, you may also submit a “participant’s feedback” form to the Director, Office of Research Ethics if you have served as a participant in this project and would care to comment on the procedures involved. All information submitted to the Director will be strictly anonymous, unless you indicate your name to be known to the Principal Investigator of this study. Page 5 is provided for your convenience in this regard.



PARTICIPANT CODE:

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Simon Fraser University

Principal Investigator: Stephen R. Campbell, PhD **Phone:** 604-291-3630
Application Number: 37778 **Email:** sencael@sfu.ca
Study Title: *Mathematics Educational Neuroscience Laboratory Study*

Statement of Comprehension and Voluntary Agreement

I am being asked to participate in an educational neuroscience research study. By initialing the components I am agreeing to participate in, and by signing accordingly, I acknowledge that I have read and understand the information provided above, that I have been given an opportunity to ask questions, and all of my questions have been answered to my satisfaction. I attest that the demographic and pre-screening information that I may choose to provide for volunteering my participation in components 2 and 3 is, to the best of my knowledge, both accurate and complete. I further attest that am at least 19 years of age or older.

Understanding that all of the data I provide will be anonymously maintained, analyzed, presented and published, by checking and initialing, I am providing my consent to participate in the following components of this (minimal risk) research study:

_____ Component 1 (Psychometric)
 please check and initial (no risk — see 1 above)

_____ Component 2 (Audiovisual)
 please check and initial (minimal risk — see 2 above)

_____ Component 3 (Psychophysical)
 please check and initial (minimal risk — see 3 above)

- I have seen the participant videos for Components 2 and 3
- do not** present my anonymous likeness at academic venues
- do not** publish my anonymous likeness in academic publications

By signing this informed consent form, I willingly agree, free of coercion and undue influence, to participate in this (minimal risk) research study, subject to my specific permissions, as indicated above:

| | | |
|---------------------|--------------------------|------|
| Name of Participant | Signature of Participant | Date |
|---------------------|--------------------------|------|

I have explained the research to the participant, and answered all of his/her questions. I believe that he/she understands the information described in this document and, with that understanding, freely and willingly consents to participate:

| | | |
|---|--|------|
| Name of Investigator (or authorized designate) | Signature of Investigator (or authorized designate) | Date |
|---|--|------|



PARTICIPANT CODE:

Stephen R. Campbell, Ph.D.
Assistant Professor
Faculty of Education
Simon Fraser University
8888 University Drive
Burnaby, BC, V5A 1S6
Canada

Dear Dr. Campbell

RE: Withdrawal of Consent

Study Title: *Mathematics Educational Neuroscience Laboratory Study*

This is to inform you that I am **withdrawing** my previously given consent to (please check appropriate boxes):

- participate in the minimal risk components of this study (if applicable);
- allow my *likeness* to be presented and/or published (if applicable);
- allow *any data* acquired from me to be presented and/or published

I understand that my right to withdraw this consent pertains only to data I have provided that has not already been used in an unidentifiable manner as part of a greater aggregate of data. I also understand this right will be waived for any permissions that I have provided for the anonymous presentation or publication of my likeness that have already been submitted to an academic venue or that have already been submitted to an academic publication.

Name of Participant

Signature of Participant

Date



Participant Feedback Form

Completion of this form is OPTIONAL, and is not a requirement of participation in the study. However, if you have served as a participant and would care to comment on the procedures involved, you may complete the following form and send it to the Director, Office of Research Ethics, Strand Hall, 8888 University Drive, Burnaby, B.C., V5A 1S6. All information received will be strictly anonymous, unless you wish your name to be made known to the researcher, as shown below.

Name of Research Study: Mathematics Educational Neuroscience Laboratory Study (# 37778)
Investigator Name: Dr. Stephen R. Campbell, Ph.D.
Investigator Department: Education

Did you sign an Informed Consent Form before participating in the project?

Yes No

Were there significant deviations from the originally stated procedures?

Yes No

If Yes, please describe the nature of the deviation, the date, place and time:

Please make any comments you may have: _____

Completion of the Information Below is Optional

Participant Last Name: _____ First Name: _____

Participant Contact Information / Address: _____

Home Telephone: _____ Work Telephone: _____

Email: _____

Do you wish your feedback to be anonymous Yes No